MODIS Near-Real-Time Colour Image Display

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A system has been developed for public display of MODIS colour images in near-real-time. The hardware and software components of the systems are described and some example images are shown.

CSIRO

www.cmar.csiro.au/remotesensing

Tasmanian Earth Resource Satellite Station (TERSS)

Colour Image Production

- MODIS DB is received by the TERSS antenna near Hobart in Tasmania
- Imapp generates 1b data
- Channels 1,3 and 4 are converted to reflectance using Descloitres crefl *
- Areas are extracted and reprojected into required resolution in one step
  (differs from Gumley *et al*)
- Spatial enhancement is performed using reprojected channel 1_{250} and 1_{500} as required
- Spectral enhancement to accentuate land and water features
- All the processing after crefl performed using CSIRO's CAPS software which is freely available

www.cmar.csiro.au/remotesensing/caps

Data → Imapp → Level 1b → crefl → reflectance

$1_{250}, 1_{500}, 3_{500}, 4_{500}$

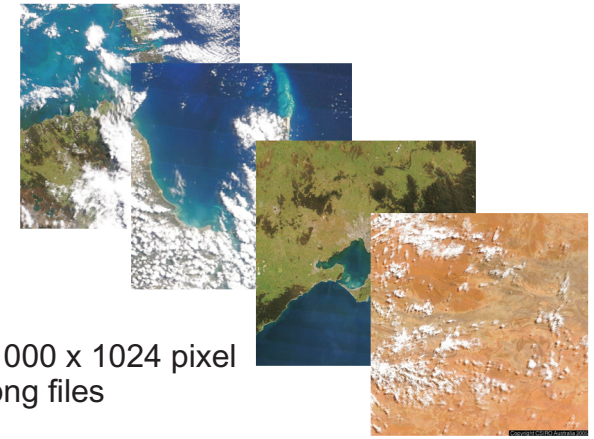
extract areas and reproject → lat/lon areas → Spatial enhancement required?

yes → $3_{250} = 3_{500} * (1_{250}/1_{500})$
$4_{250} = 4_{500} * (1_{250}/1_{500})$

Spatial enhancement

no

spectral enhancement

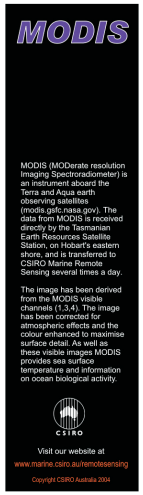


1000 x 1024 pixel png files

* see Gumley, Descloitres and Schmaltz,
Creating Reprojected True Color MODIS Images: A Tutorial,
rapidfire.sci.gsfc.nasa.gov/faq/MODIS_True_colour.pdf

Display Image Production

- Display images are 1280 x 1024 to fit current 17 and 19 inch LCD screens
- Colour images 1000 x 1024 leaving 280 x 1024 for explanatory “side-bar”
- Side-bar has fixed text and graphics plus scene specific information (place, date)
- The three elements image, side-bar and scene specific information are combined to form the output 1280 x 1024 image
- Currently images are selected for Australian capital cities, places of interest and a full pass scene



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Fraser Island
250 metre colour
09:44 AEST
Wednesday
25 September 2005

+

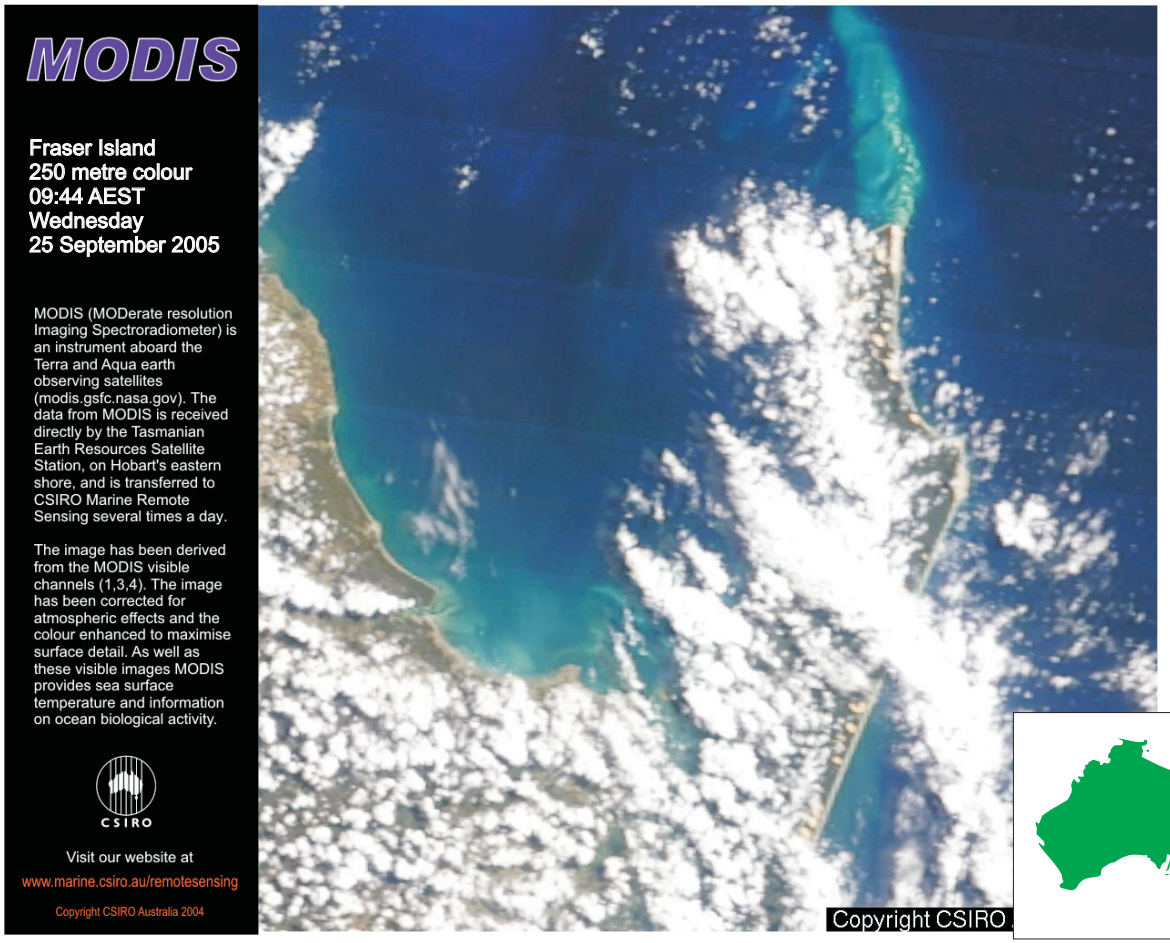
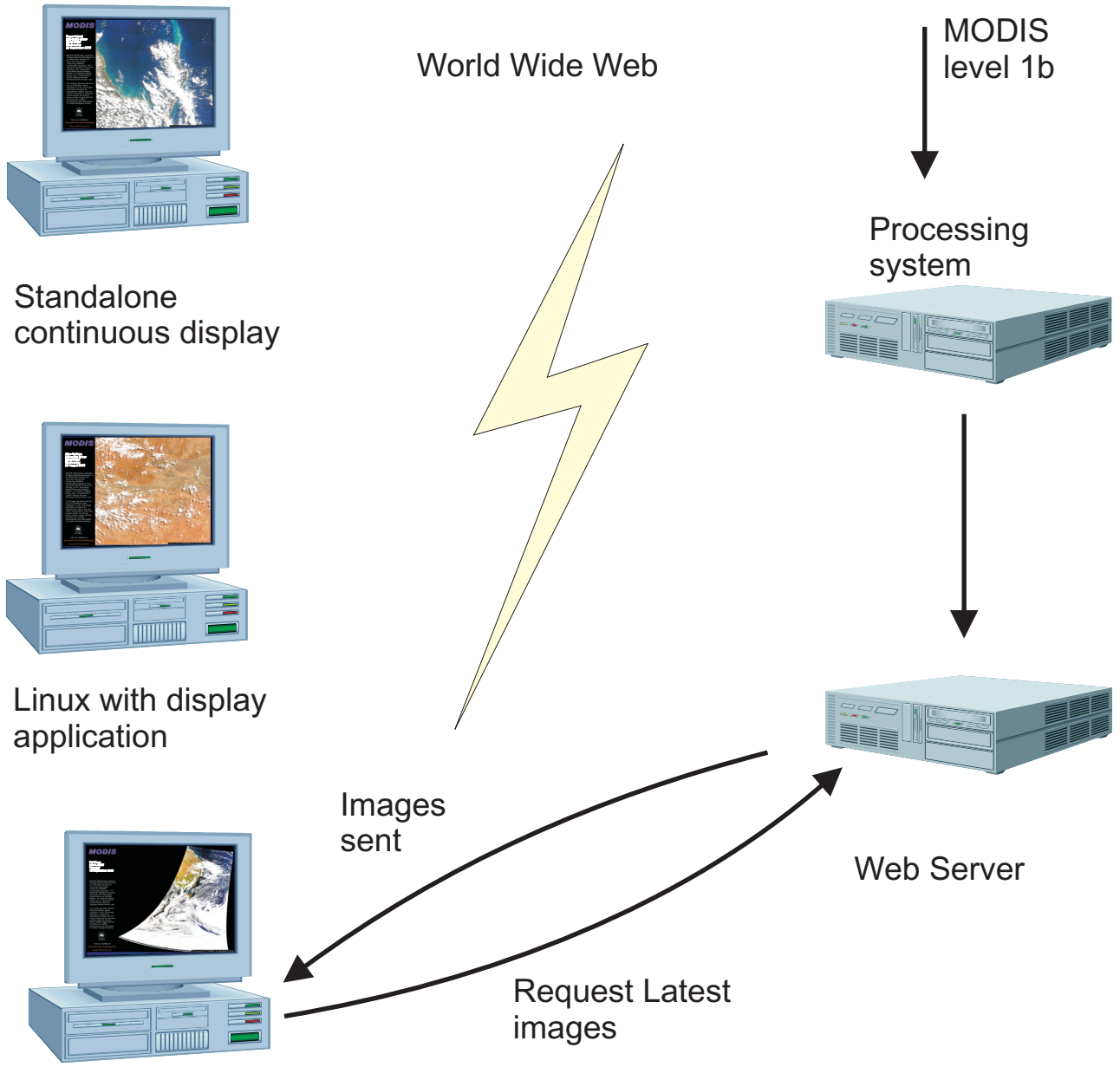


Image Distribution and Display

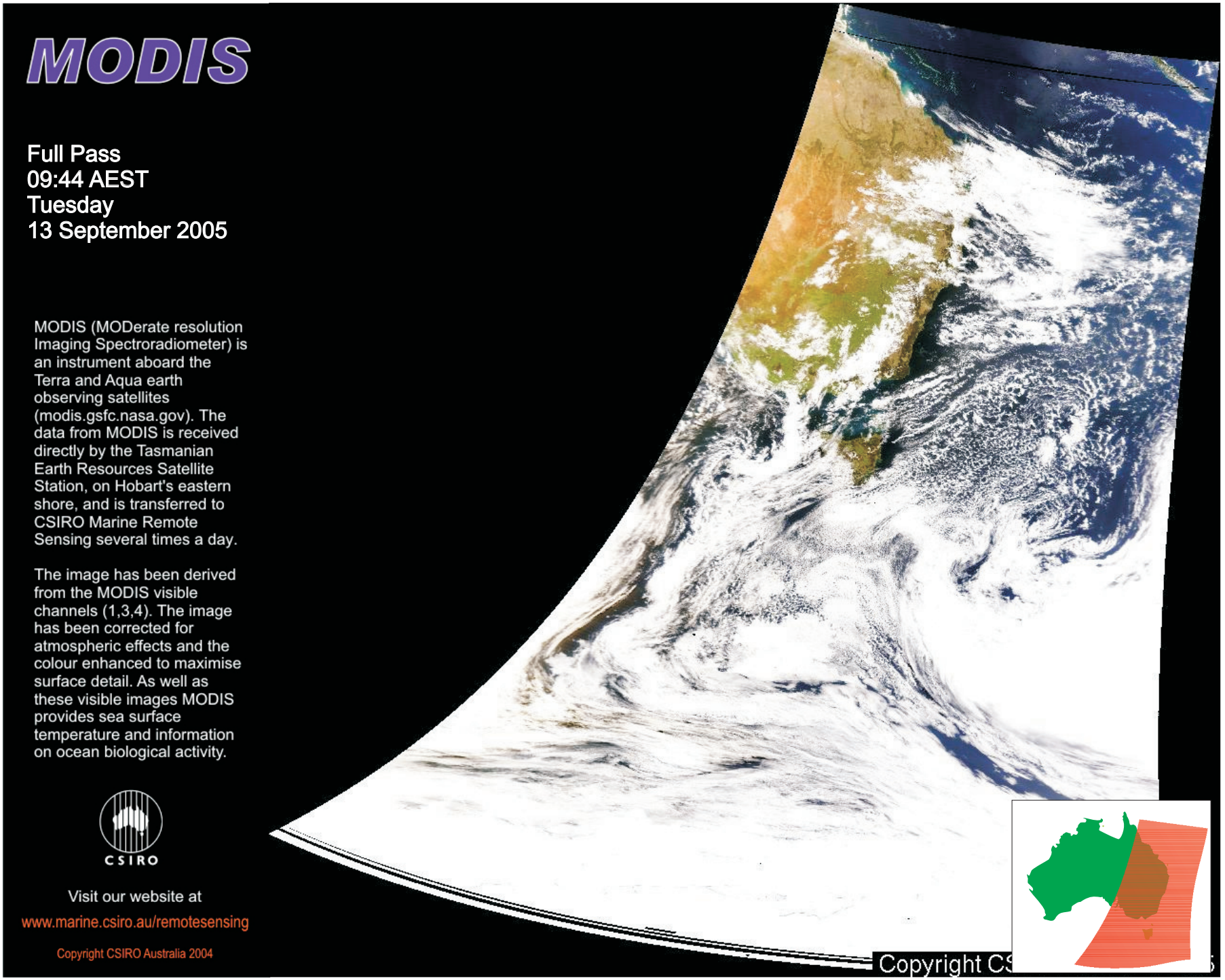
- Display distribution system uses web technology to allow clients access to instructions
- At present there are four client display computers situated in Hobart(2), Canberra and Sydney
- Clients run linux O/S and make requests to an Apache web server which has CGI enabled
- Each client has a unique name and provides this plus some key words to indicate to the web server what the clients wants
- The web server looks to see if there is anything available to send to the client and passes on new images and instructions
- Clients normally loop through a group of images updated by the server.



MODIS colour image of northern Tasmania 1 September 2005
River plumes from recent floods are shown as well as an algal bloom (insert SEM view of algae)

Conclusion

- Public display of MODIS colour image within 40 minutes of an overpass
- Currently services four display clients with individual streams of images with scope for further expansion
- Monitors specified areas and has been scientifically valuable in detecting algal blooms



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